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| APPLICATION NO.                                                                                                 | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------------------------------------------------------------------------------------------|-------------|----------------------|---------------------|------------------|
| 09/882,520                                                                                                      | 06/15/2001  | Dong Il Han          | 2080-3-26           | 9939             |
| 35884                                                                                                           | 7590        | 05/11/2004           | EXAMINER            |                  |
| LEE, HONG, DEGERMAN, KANG & SCHMADEKA, P.C.<br>801 SOUTH FIGUEROA STREET<br>14TH FLOOR<br>LOS ANGELES, CA 90017 |             |                      | CHEN, PO WEI        |                  |
|                                                                                                                 |             | ART UNIT             |                     | PAPER NUMBER     |
|                                                                                                                 |             | 2676                 |                     | 8                |

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                  |                  |
|------------------------------|----------------------------------|------------------|
| <b>Office Action Summary</b> | Application No.                  | Applicant(s)     |
|                              | 09/882,520                       | HAN, DONG IL     |
|                              | Examiner<br>Po-Wei (Dennis) Chen | Art Unit<br>2676 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 08 March 2004.
- 2a) This action is FINAL.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1,3,4,6,7,9-14 and 16-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,3,4,6,7,9-14 and 16-20 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_

## **DETAILED ACTION**

In response to an Amendment received on March 8, 2004. This action is final.

Claims 1, 3-4, 6-7, 9-14 and 16-20 are pending in this application. Claims 1, 4, 7 and 14 are independent claims.

The present title of the invention is "Apparatus and Method for Correcting Keystone Distortion".

The Group Art Unit of the Examiner case is now 2676. Please use the proper Art Unit number to help us serve you better.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-4, 6-7, 9-14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over West et al. (US 6,339,434; refer to as West herein) in view of Furuhashi et al. (US 5,909,205; refer to as Furuhashi herein).

3. Regarding claim 1, West discloses an image scaling circuit comprising:

An apparatus for correcting keystone distortions in a display system ("Fig. 9 illustrates the effect of the image warping function when used for keystone correction", lines 6-7 of column 3);

A horizontal size generator that receives N horizontal sync signals of an input image and generates N corresponding horizontal output sizes, each of said output sizes being generated at each of said sync signals based on a horizontal input size, a vertical size, and a desired keystone

factor of said input image (“Keystone correction involves incrementing or decrementing the horizontal down sample value M and start position at each line. The vertical down sample value M is also incremented or decremented each line to preserve the aspect ratio of the image from top to bottom” and “The vertical and horizontal sample rate converters 21 and 22, as mentioned above, scale the captured image up or down to any arbitrary resolution”, lines 21-37 of column 3, lines 4-62 of column 7 and lines 66-67 of column 9 and line 1 of column 10 and Fig. 1 and 11).

A format converter that receives said input image and generates an output image, each line of said output image now having said corresponding horizontal output size, where N represents a total number of lines of said output image (“Keystone correction involves incrementing or decrementing the horizontal down sample value M and start position at each line. The vertical down sample value M is also incremented or decremented each line to preserve the aspect ratio of the image from top to bottom” and “The vertical and horizontal sample rate converters 21 and 22, as mentioned above, scale the captured image up or down to any arbitrary resolution”, lines 4-12 of column 7 and lines 66-67 of column 9 and lines 1-15 of column 10 and Fig. 11). It is noted that the vertical and horizontal sample rate converters scale each line of the image to the desired resolution format according to the keystone correction amount. Thus, limitation of claim is met.

A sync signal generator that generates control signals based on said sync signals and said horizontal output sizes (“The display controller 150 generates timing signals to control the pixilated output display device”, line 9 of column 8 to line 43 of column 10 and Fig. 11; the display controller 150 corresponds to a sync signal generator generates control signals based

on the data received. And the data is generated based on the horizontal scalar (horizontal output size) and horizontal synchronization signal (sync signal)).

West does not disclose a sync signal generator that generates read signal and a line memory that stores each line of said output image generated from said format converter and outputs said stored line of said output image according to said read control signals. Furuhashi discloses a liquid crystal display control device which "The A/D convertor 104 digitizes an analog video signal 102 output from the personal computer 101, and then outputs the digitalized signal as a digital video signal 105 to the frame memory 110...The data which are temporarily stored in the frame memory 110 are output to the enlargement processing control circuit 118 and the line memory 111" and "The operation of the memories 110 and 111 is controlled by the frame memory control signal 113 and the line memory control signal 114 which are input from the frame/line memory control circuit 112", lines 1-65 of column 7 and Fig. 1 and 2). It would have been obvious to one of ordinary skill in the art to utilize the teaching of Furuhashi to provide the function of line-by-line data processing and a way to control memories in a well-known manner. Because West shows outputting the processed data to a conventional display (Fig. 13; such as a 'Flat panel monitor', lines 52-53 of column 10) and Furuhashi discloses such a conventional monitor. And it is necessary to have control signals to read (and write) data from (to) a memory and West does show using memories for storing data. The use of a line memory provides a way to store the data for display.

4. Regarding claim 3, West discloses an image scaling circuit comprising:

A sync signal generator that generates control signals based on said sync signals and said

horizontal output sizes (“The display controller 150 generates timing signals to control the pixilated output display device”, lines 30-31 of column 10). It is noted that the display controller generates timing signals based on horizontal sample rate converters (element 22 of Fig. 11) which include the function to scale the size of the input signal from frame buffer (element 125 of Fig. 11). Also lines 66-67 of column 9 and lines 1-5 of column 10. Thus limitation of claim is met;

A line memory that stores each line of said input image and outputs said stored line of said input image to said format converter (“If a line memory buffer 80 is used, each buffer contains the data from a row of data with the nth pixel of each row to be factored available at the same time to a multiplexer. In the preferred embodiment, the nth pixel of each row is read directly from memory. The output pixel value is then calculated using multipliers 82 and adders 83”, lines 24-43 of column 5 and Fig. 7B). It is noted that West discloses a sample rate converter for a vertical column of data in Fig. 7B. In the system, the input value into line memory and then output to perform the function of converting the vertical scaling. Thus, limitation of claim is met.

It is noted that West does not disclose a read control signal. However, this is known in the art taught by Furuhashi. Furuhashi discloses a liquid crystal display control device which “The operation of the memories 110 and 111 is controlled by the frame memory control signal 113 and the line memory control signal 114 which are input from the frame/line memory control circuit 112”, lines 51-54 of column 7 and Fig. 1).

5. Regarding claims 10-13, it is noted that West does not specifically disclose the horizontal output size of a specific line being larger or smaller than other lines in the image. However,

West teaches a “keystone correction involves incrementing or decrementing the horizontal down sample value M and start position at each line...the following equations can be used to calculate the increment/decrement amounts based on a desired angle of keystone correction” (lines 4-62 of column 7). It would have been obvious to one of ordinary skill in the art at the time of invention to realize that by utilizing the teaching of West, each line is incremented or decremented based on the desired angle of keystone correction. Thus, depending on the desired angle of keystone correction, each line can have a larger or smaller or the same size with other lines in the image. Thus, limitations of the claims are met.

6. Regarding claims 4, 6, 7, 9, 14 and 16, statements presented, above, with respect to claims 1 and 3 are incorporated herein.
7. Regarding claims 17-20, the statement presented, above, with respect to claims 10-13 is incorporated herein.

#### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's argument that references West and Furuhashi is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the Applicant disclosed a method of correcting keystone and West discloses an image scaling method comprising keystone correction (lines 21-37 of column 3, lines 4-62 of column 7 and lines 66-67 of column

9 and line 1 of column 10). And reference Furuhashi is directed to a display control device that is used in combination of West to provide the function of utilizing a memory and reading signal in image processing such as one disclosed by West.

The Applicant further argues that references do not teach or suggest a sync signal generator that generates read control signals based on said sync signals and said horizontal output sizes and a line memory that stores each line of said output image generated from said format converter and outputs said stored line of said output image according to said read control signals. However, this is known in the art taught by West in view of Furuhashi (line 9 of column 8 to line 43 of column 10 and Fig. 11, West; lines 1-65 of column 7 and Fig. 1 and 2, Furuhashi), statements presented above, with respect to claim 1 are incorporated herein. The Applicant also argues that the references cannot be combined. However, it would have been obvious to one of ordinary skill in the art to utilize the teaching of Furuhashi to provide the function of line-by-line data processing and a way to control memories in a well-known manner. Because West shows outputting the processed data to a conventional display (Fig. 13; such as a 'Flat panel monitor', lines 52-53 of column 10) and Furuhashi discloses such a conventional monitor. And it is necessary to have control signals to read (and write) data from (to) a memory and West does show using memories for storing data. The use of a line memory provides a way to store the data for display.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

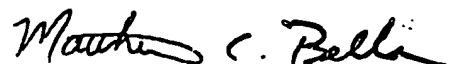
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Po-Wei (Dennis) Chen whose telephone number is (703) 305-8365. The examiner can normally be reached on Monday-Thursday from 8:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C Bella can be reached on (703) 308-6829. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Po-Wei (Dennis) Chen  
Examiner  
Art Unit 2676

Po-Wei (Dennis) Chen  
May 6, 2004



MATTHEW C. BELLA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600